

LESSON ON CARBOHYDRATES - Simple and complex

I tell my students we are going on a virtual tour of the school. We will be going to the chemistry department, English, music, science and foods departments.

In chemistry we do the chemical abbreviations for Carbon Hydrogen and Oxygen.

In English we talk about prefixes - Mono means 1; di means 2; poly means many.

In Food science we talk about saccharides.

There are 3 different mono saccharides - Fructose (fruit sugar) Glucose (blood sugar) and galactose which is never found alone in nature so we don't spend time talking about it.

There are 3 different di-saccharides - sucrose = fructose and glucose (table sugar) maltose = 2 glucose (malt sugar) and lactose = glucose and galactose (milk sugar)

Back to English department - what is a suffix? What do you think the suffix OSE means? If it ends in OSE it is most likely is some kind of sugar.

Food science - polysaccharides are starch and fiber.

Polysaccharides are complex carbohydrates SO starch and fiber are complex carbohydrates.

Mono and di saccharides are simple carbohydrate SO sugar is a simple carbohydrate.

Health - simple carbohydrates are digested faster and give you quick energy. So if you want quick energy you may have been told to eat a candy bar.

If you want sustained energy then you eat complex carbohydrates. Like the long distance runner eating pasta.

Now to the Music department. Learn the carbohydrate song. The tune is Frere Jacques. If you learn and pass off the song to the teacher - you will get extra credit points for the test on carbohydrates.

DRAMA - I have the students all stand and say the word saccharides like a sumo wrestler, then as a southern belle. I invite them to do it all together OR they can do it alone.

NEXT we do the carbohydrate search with the iodine. I have the iodine in custard cups on the supply table for them to pick up. We found something interesting -

The inside of a marshmallow is simple. The outside is complex. Why do you think that might be? Bananas that are green are starch, ripened bananas are sugary.

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Name _____ Date _____ Period _____

A Virtual Tour of Carbohydrates

1. FOODS CLASS - Carbohydrates is a nutrient that provides _____.

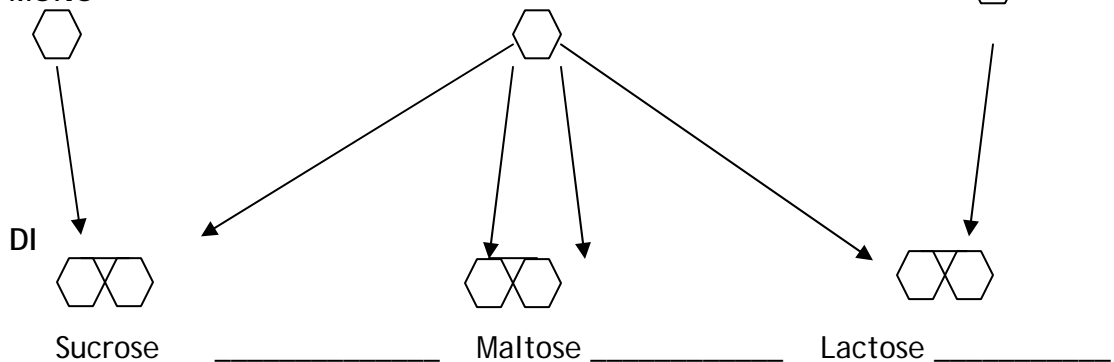
2. CHEMISTRY - CHO the chemicals are C _____ H _____ O _____

3. ENGLISH - *What is a prefix?* *What do these prefixes mean?*

MONO _____ DI _____ POLY _____

4. CHEMISTRY - Fructose _____ sugar Glucose _____ sugar Galactose

MONO



Fructose, glucose and galactose are _____ saccharides.

Sucrose, Maltose and Lactose are _____ saccharides.

5. ENGLISH - *What is a suffix?* *What does the suffix OSE mean?* _____

POLY



6. _____ AND _____ are Polysaccharides

CHEMISTRY - SIMPLE AND COMPLEX CARBOHYDRATES

7. Polysaccharides are _____ carbohydrates SO

Starch and fiber are _____ carbohydrates.

8. Mono- and di-saccharides are _____ carbohydrates ... SO

Sugar is a _____ carbohydrate

9. HEALTH - Would simple carbohydrates or complex carbohydrates be digested quicker?

10. DRAMA - Say Saccharides like a Sumo Wrestler. Now like a southern belle.

11. CHOIR

CARBOHYDRATE SONG (Sung to "Frere Jacques")

Carbohydrate	Carbohydrate
Simple and Complex	Simple and Complex
Sugars Are Simple	Sugars Are Simple
Starch Is Complex	Starch Is Complex

Name _____ Date _____ Period _____

A Virtual Tour of Carbohydrates

1. FOODS CLASS - Carbohydrates is a nutrient that provides ENERGY.

2. CHEMISTRY - CHO the chemicals are CARBON HYDROGEN OXYGEN

3. ENGLISH - What is a prefix? *A syllable at the beginning of a word.*

What do these prefixes mean?

MONO ONE

DI TWO

POLY MANY

4. CHEMISTRY - Fructose FRUIT sugar Glucose BLOOD sugar Galactose

MONO



DI



Sucrose REGULAR SUGAR Maltose MALT Lactose MILK

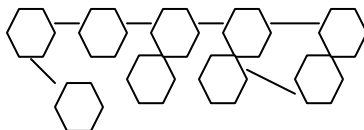
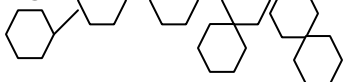
Fructose, glucose and galactose are MONO saccharides.

Sucrose, Maltose and Lactose are DI saccharides.

5. ENGLISH - What is a suffix? *A syllable at the end of the word that changes the meaning of the word.*

What does the suffix OSE mean? a sugar

POLY



6. STARCH AND FIBER are Polysaccharides

CHEMISTRY - SIMPLE AND COMPLEX CARBOHYDRATES

7. Polysaccharides are COMPLEX carbohydrates SO

Starch and fiber are COMPLEX carbohydrates.

8. Mono- and di-saccharides are SIMPLE carbohydrates ... SO

Sugar is a SIMPLE carbohydrate

9. HEALTH - Would simple carbohydrates or complex carbohydrates be digested quicker?

SIMPLE Starches have to be broken down to sugars to be digested

10. DRAMA - Say saccharides like a Sumo wrestler. Now like a southern belle.

11. CHOIR

CARBOHYDRATE SONG (Sung to "Frere Jacques")

Carbohydrate	Carbohydrate
Simple and Complex	Simple and Complex
Sugars Are Simple	Sugars Are Simple
Starch Is Complex	Starch Is Complex

NAME _____ DATE _____ Period _____

CARBOHYDRATE SEARCH

This experiment will help you determine if a food is a simple or complex carbohydrate. If a food is a simple carbohydrate, the iodine will turn a brown-tan. If a food is a complex carbohydrate, the food will turn a dark, blue-black. Test each food below to determine if it is a simple or complex carbohydrate. Record your results in the box below.

Items needed:

½ teaspoon iodine	1 Tablespoon water	1 teaspoon flour
1 sugar cube	1 slice apple	1 marshmallow, cut in half
1 vanilla wafer	1 slice potato	1 slice very ripe banana
1 tablespoon honey	1 slice bread	1 slice green banana

DIRECTIONS:

1. In a custard cup put one teaspoon of iodine and 1 tablespoon water. (It should be dark brown color. Be careful, because iodine can stain your hands, clothes and table.)
2. Put the flour and sugar on your foam plate. Use a plastic spoon to put a few drops of the iodine solution on the flour and the sugar. Record the results.

Sugar is a simple carbohydrate. Flour is a complex carbohydrate.

Compare the other foods to the sugar and flour.

3. Lay the foods on the 2nd foam plate leaving plenty of space between items.
4. Put a few drops of the iodine solution on each one of the food items.
5. Record the color each food changes to and determine which foods are simple carbohydrates and which foods are complex carbohydrates.

FOOD SAMPLE	COLOR	SIMPLE OR COMPLEX
1. Flour		
2. Sugar		
3. Apple		
4. Potato		
5. Bread		
6. Honey		
7. Vanilla wafer		
8. Marshmallow outside		
9. Marshmallow inside		
10. Green banana		
11. Ripe banana		
12. What is your theory about the marshmallow?		
13 Why use ripe bananas for banana bread?		